

What is claimed is:

1 1. A glass bulb for a cathode-ray tube comprising: a panel
2 unit having a panel screen; a neck unit holding an electron
3 gun; and a funnel unit having a funnel-like shape, wherein
4 the panel unit and the neck unit are bridged by the funnel
5 unit, wherein

6 the funnel unit is formed from a plurality of glass
7 members, the plurality of glass members including at least
8 a first glass member on a side of the panel unit and a second
9 glass member on a side of the neck unit, and

10 a maximum-to-minimum thickness ratio of each of the
11 plurality of glass members is designed to be within a range
12 suitable for producing the plurality of glass members using
13 pressing, the maximum-to-minimum thickness ratio being a
14 ratio of thickness of a thickest portion to thickness of
15 a thinnest portion.

1 2. The glass bulb of claim 1,

2 wherein the plurality of glass members are prepared
3 by using a glass material conforming to EIAJ(Electronic
4 Industries Association of Japan)•LOF-03, and

5 in each of the plurality of glass members, the maximum
6 thickness is no more than substantially five times the
7 minimum thickness.

1 3. The glass bulb of claim 1,

2 wherein at least one of the plurality of glass members

3 is designed to be physically strengthened.

1 4. The glass bulb of claim 3,

2 wherein the physical strengthening is performed by
3 air-cooling a glass member molded by pressing, heating the
4 glass member again to a temperature which is 20-40°C lower
5 than an annealing point, and cooling the glass member slowly.

1 5. The glass bulb of claim 1,

2 wherein the plurality of glass members are joined
3 by sealing with a glass frit so that inside of the glass
4 bulb is kept in a vacuum state.

1 6. The glass bulb of claim 1,

2 wherein the funnel unit is formed from two glass
3 members, which are (a) the first glass member to be joined
4 to the panel unit and (b) the second glass member to be
5 joined to the neck unit, the panel unit and the neck unit
6 being made of a glass material, and

7 wherein the first glass member and the second glass
8 member are joined at a position including an inflection
9 point on a periphery of the funnel unit on a supposed plane
10 substantially perpendicular to a tube axial direction.

1 7. The glass bulb of claim 6,

2 wherein the first glass member has substantially
3 a same shape as a shape in which a certain portion is removed

4 from the panel unit.

1 8. The glass bulb of claim 1,

2 wherein the first glass member which is to be joined
3 to the panel unit is formed in one piece and designed to
4 be physically strengthened, the panel unit being made of
5 a glass material.

1 9. The glass bulb of claim 1,

2 wherein a lead terminal is (a) connected to an
3 electrode formed on an inner surface of the funnel unit
4 and (b) extended to outside of the glass bulb through a
5 sealed portion, the sealed portion being where at least
6 two out of the plurality of glass members are joined.

1 10. The glass bulb of claim 1,

2 wherein a panel unit glass member that forms the
3 panel unit is designed to be physically strengthened.

1 11. A glass bulb for a cathode-ray tube comprising: a panel
2 unit having a panel screen; a neck unit holding an electron
3 gun; and a funnel unit having a funnel-like shape, wherein
4 the panel unit and the neck unit are bridged by the funnel
5 unit, wherein

6 physically strengthened glass is used in at least
7 part of the funnel unit.

1 12. A manufacturing method of a glass bulb for a cathode-ray
2 tube including: a panel unit having a panel screen; a neck
3 unit holding an electron gun; and a funnel unit having a
4 funnel-like shape, wherein the panel unit and the neck unit
5 are bridged by the funnel unit, the manufacturing method
6 comprising:

7 a glass member preparing step for preparing at least
8 one physically strengthened glass member for the funnel
9 unit, the funnel unit being formed from a plurality of glass
10 members; and

11 a glass bulb forming step for forming the glass bulb
12 from the plurality of glass members including the glass
13 member which is prepared in the glass member preparing step.

1 13. A cathode-ray tube device comprising:

2 a glass bulb for the cathode-ray tube including:
3 a panel unit having a panel screen; a neck unit holding
4 an electron gun; and a funnel unit having a funnel-like
5 shape, wherein the panel unit and the neck unit are bridged
6 by the funnel unit, wherein

7 the funnel unit is formed from a plurality of glass
8 members, the plurality of glass members including at least
9 a first glass member on a side of the panel unit and a second
10 glass member on a side of the neck unit, and

11 a maximum-to-minimum thickness ratio of each of the
12 plurality of glass members is designed to be within a range
13 suitable for producing the plurality of glass members using

14 pressing, the maximum-to-minimum thickness ratio being a
15 ratio of thickness of a thickest portion to thickness of
16 a thinnest portion.

1 14. The cathode-ray tube device of Claim.13,
2 wherein the plurality of glass members are prepared
3 by using a glass material conforming to EIAJ(Electronic
4 Industries Association of Japan)·LOF-03, and
5 in each of the plurality of glass members, the maximum
6 thickness is no more than substantially five times the
7 minimum thickness.

1 15. The cathode-ray tube device of Claim.13,
2 wherein at least one of the plurality of glass members
3 is designed to be physically strengthened.

1 16. The cathode-ray tube device of Claim.13,
2 wherein the plurality of glass members are joined
3 by sealing with a glass frit so that inside of the glass
4 bulb is kept in a vacuum state.

1 17. The cathode-ray tube device of Claim.13,
2 wherein a lead terminal is (a) connected to an
3 electrode formed on an inner surface of the funnel unit
4 and (b) extended to outside of the glass bulb through a
5 sealed portion, the sealed portion being where at least
6 two out of the plurality of glass members are joined.

1 18. A cathode-ray tube device comprising:
2 a glass bulb for the cathode-ray tube including:
3 a panel unit having a panel screen; a neck unit holding
4 an electron gun; and a funnel unit having a funnel-like
5 shape, wherein the panel unit and the neck unit are bridged
6 by the funnel unit, wherein
7 physically strengthened glass is used in at least
8 part of the funnel unit.